

List of Contents

NUMBER 1

MATHEMATICS AND THE MICROCOMPUTER

E. Y. Rodin	vii	Foreword
		<i>Introduction</i>
B. A. Fusaro	1	Mathematics and the microcomputer
		<i>Calculus</i>
F. J. Hickernell and W. Proskurowski	3	Design of a calculus microcomputer laboratory
		<i>Differential Equations</i>
J. L. Van Iwaarden	25	The computer as a teaching tool in ordinary differential equations
		<i>Graphics</i>
R. E. Myers	33	Fundamental concepts of microcomputer graphics
		<i>Linear Algebra</i>
G. Williams	43	The microcomputer in linear algebra
		<i>Scientific Computing</i>
L. B. Rall	53	An introduction to the scientific computing language Pascal-SC
		<i>Statistics</i>
F. S. Gordon and S. P. Gordon	71	Microcomputer graphics for statistical education
	I	<i>Software Survey Section</i> Calculus Lab; Linear Algebra Computer Companion; Pascal-SC Compiler and Libraries; Computer Graphics Demonstration in Statistics and Probability
	VII	Softstrip® data strip containing the table of contents of this issue

NUMBER 2

	iii	Softstrip® data strip containing the table of contents of this issue
A. Gerasoulis and R. P. Srivastav	81	The stability of the Gauss-Chebyshev method for Cauchy singular integral equations
A. E. Ali	91	Mathematical modelling of side-looking radar imaging geometry and errors
J. He	119	Practical stability of discontinuous large-scale systems

**G. Subramanian,
C. V. Raghava Rao and
K. Pramadavalli**

- 127 A circular cylinder in a flow field with parabolic velocity distribution—a numerical study

R. Pérez-Gómez

- 133 The four regular mosaics missing in The Alhambra

**P. L. Mills, S. Lai,
M. P. Duduković and
P. A. Ramachandran**

- 139 Comparison of solution methods for a mathematical model of dilute solute mass transfer with chemical reaction on a nonuniform surface

I Software Survey Section

NUMBER 3

- iii Softstrip® data strip containing the table of contents of this issue

**S. V. R. Rao
and K. F. Willis**

- 153 Micro-computer applications in environmental engineering

J. G. Reid

- 157 Normal functions of normal random variables

D. J. Hand

- 161 A shrunken leaving-one-out estimator of error rate

**W. S. Yousif
and D. J. Evans**

- 169 The modified alternating group explicit (MAGE) algorithm for solving tridiagonal linear equations

S. S. Al-Fedaghi

- 173 The two-row constraints realization problem

A. Vanderbauwhede

- 185 Note on a paper by H. S. Qin

**U. Eckhardt
and M. G. El Sheikh**

- 189 A Fourier method for initial value problems with mixed boundary conditions

**A. de Palma, C. Lefèvre
and M. Ben-Akiva**

- 201 A dynamic model of peak period traffic flows and delays in a corridor

**W. S. Yousif
and D. J. Evans**

- 225 Application of the AGE algorithm to the SLOR and ADI methods

- 229 Book Reports

I Software Survey Section

NUMBER 4

- iii Softstrip® data strip containing the table of contents of this issue

**A. W. Bojanczyk
and R. P. Brent**

- 233 A systolic algorithm for extended GCD computation

D. Greenspan

- 239 Quasimolecular modeling of cavity flow

L. Mansfield	249	Finite element approximation of stationary interior viscous flow problems
L. F. Shampine	255	Interpolation for variable order, Runge-Kutta methods
C. Chiccoli, S. Lorenzutta and G. Maino	261	A numerical method for generalized exponential integrals
J. W. Seaman Jr, D. W. Turner and D. M. Young	269	Polyhedron graphs for displaying multivariate data
T. C. E. Cheng	279	Minimizing the maximum deviation of job completion time about a common due-date
V. Pan	285	Algebraic complexity of computing polynomial zeros
	I	Software Survey Section

NUMBER 5

OCEAN ACOUSTIC PROPAGATION BY FINITE DIFFERENCE METHODS

Foreword by E. Y. Rodin	vii
Preface	ix
<i>Chapter 1: Introduction</i>	305
<i>Chapter 2: Ocean Acoustic Wave Propagation Problems</i>	309
2.1. The governing wave equation	309
2.2. The parabolic approximation	311
<i>Chapter 3: Finite Difference Schemes</i>	317
3.1. Formulation	318
3.2. Consistency	320
3.3. Stability	323
3.4. Convergence	324
<i>Chapter 4: Initial and Boundary Conditions</i>	327
4.1. The initial field	327
4.2. A Neumann bottom boundary condition	328
4.3. Interface treatment	330
4.4. Discussion	337
<i>Chapter 5: Range Step Size Analysis</i>	341
5.1. The heat equation model	341
5.2. An extension of the model heat equation	343
5.3. The PE	346

<i>Chapter 6: Wide-angle Capability</i>	351
6.1. Rational function approximation	353
6.2. IFD implementation	353
6.3. Estimation of the propagation angle	357
<i>Chapter 7: Applicable Solution Methods Other Than the Implicit Finite Difference Scheme</i>	361
7.1. The split-step Fourier algorithm	361
7.2. The numerical ordinary differential equation method	363
7.3. A stable explicit finite difference scheme	366
<i>Chapter 8: Representative Test Examples</i>	369
8.1. Burgers' equation	369
8.2. Range-independent problems	374
8.3. A range-dependent problem	376
8.4. Wide-angle propagation	378
<i>Chapter 9: Listing of Computer Codes</i>	385
Reference Citation Index	421
Subject Index	423
Softstrip® data strip containing the table of contents of this issue	I

NUMBER 6

	iii	Softstrip® data strip containing the table of contents of this issue
B. Codenotti and P. Favati	425	New techniques for the solution of linear systems by iterative methods
M. de la Sen	429	A discrete stable robust MRAC design with an extra adaptation parameter
X. Ying and I. N. Katz	437	A uniform formulation for the calculation of stress singularities in the plane elasticity of a wedge composed of multiple isotropic materials
E. Greenwell Yanik	459	A discrete maximum principle for collocation methods
H. P. Singh, D. D. Tripathi and R. B. Mishra	465	The structure of magnetized rotating polytropes
L. S. Shieh, S. Ganesan and J. M. Navarro	471	Transformations of a class of time-varying multi-variable control systems to block companion forms
M. S. Petković	479	Some interval iterations for finding a zero of a polynomial with error bounds
G. Adomian	497	Semilinear wave equations

501 Book Reports

I Software Survey Section

NUMBER 7

- iii Softstrip® data strip containing the table of contents of this issue

- R. Seydel** 505 New methods for calculating the stability of periodic solutions
- H. P. Singh, D. D. Tripathi and R. B. Mishra** 511 Finite-difference methods for boundary value problems at high Grashof number
- R. P. Agarwal and R. C. Gupta** 519 Linear methods for differential equations of Sobolev type
- C.-A. Wang** 527 Multiple numerical solutions of buoyancy induced flows of a vertical ice wall melting in saturated porous media
- C. S. Yang, J. F. Wang, J. Y. Lee and F. T. Boesch** 541 Reliability properties of the hypercube network
- H. Brunner** 549 Implicit Runge-Kutta-Nyström methods for general second-order Volterra integro-differential equations
- W. W. Hager** 561 Bidiagonalization and diagonalization
- D. J. Hand and G. M. Fitzmaurice** 573 Error rate estimation by mixture decomposition

I Software Survey Section

NUMBER 8

- iii Softstrip® data strip containing the table of contents of this issue

- T. C. E. Cheng** 579 Optimal total-work-content-power due-date determination and sequencing
- V. A. Ubhaya** 583 An $O(n)$ algorithm for least squares quasi-convex approximation
- V. Pan** 591 Sequential and parallel complexity of approximate evaluation of polynomial zeros
- H. P. Singh, D. D. Tripathi and R. B. Mishra** 623 Structure of a point heat source near an interface

- L. S. Shieh, S. R. Lian,
C. B. Park and
N. P. Coleman** 629 Fast and stable recursive algorithms for continuous-
time and discrete-time model conversions
- K. Ranai** 645 Simulation performance of information placement
strategies
- C. V. Emin
and G. Adomian** 655 Letters to the Editor

I Software Survey Section

NUMBERS 9-12

MATHEMATICAL MODELS IN MEDICINE

VOLUME 2

- vii About this issue
- ix Author's guidelines
- M. Witten** xi Mathematical modeling and computers in medicine: Editor's
remarks
- Review Article*
- J. R. Lumb** 657 Lymphocyte differentiation, repertoire development and
migration: the need for mathematical models
- D. R. Rigney** 699 Inherited rate model of the cell cycle: kinetics of related
cells, epi-genetics of ribosomal DNA transcription and the
evaluation of cancer-therapy fractionation schedules and
doses
- H. Franke, H. E. Wichmann,
C. S. Potten and L. Todd** 741 Modelling of the influence of $^3\text{HTdR}$ on cell kinetics in
mouse epidermis
- F. W. Schultz,
A. C. M. Martens and
A. Hagenbeek** 751 Computer simulation of the progression of an acute myelo-
cytic leukemia in the Brown Norway rat
- A. Bertuzzi, A. Gandolfi,
A. Germani, R. Vitelli,
G. Badaracco and G. Starace** 763 Study of cell kinetics by computer-analyzed flow cytometric
histograms
- C. Rossi** 771 General software for the analysis of cytofluorimetric data by
E-M methods
- W. DÜchting and
Th. Vogelsaenger** 783 An approach of modelling and simulating the spread of
heterogeneous tumor cells in a three-dimensional tissue
segment
- S. Gaglio, M. Genovesi,
C. Ruggiero, G. Spinelli,
C. Nicolini, G. Bonadonna
and P. Valagussa** 793 Expert systems for cancer chemotherapy

P. Periti	803	A system theoretical approach to the optimization of cancer treatment
I. Kramer	817	A dynamical model estimating the upper and lower bounds of the infectivity of the HTLV-III/LAV virus for the male bisexual and homosexual population in the absence of preventative measures
A. G. Shannon, J. H. Clarke and L. J. Hills	829	Contingency relations for infectious diseases
C. P. Tsokos and M. N. Oğuztöreli	835	A probabilistic model for breast cancer survival data
J. Eller, I. Györi, M. Zöllei and F. Krizsa	841	Modelling thrombopoiesis regulation—I. Model description and simulation results
I. Györi and J. Eller	849	Modelling thrombopoiesis regulation—II. Mathematical investigation of the model
W. D. Wosilait, R. H. Luecke and M. P. Ryan	861	Numerical simulations of the infusion of Adriamycin using a physiological flow model
J. M. Robins and H. Morgenstern	869	The foundations of confounding in epidemiology
J. M. Robins	917	Errata to "A new approach to causal inference in mortality studies with a sustained exposure period—application to control of the healthy worker survivor effect"
J. M. Robins	923	Addendum to "A new approach to causal inference in mortality studies with a sustained exposure period—application to control of the healthy worker survivor effect"
<i>Book Reviews</i>		
G. Stefanek	947	The Handbook of Artificial Intelligence, Vol. 1. By A. Barr and E. A. Feigenbaum
K. M. Walsh	947	Microcomputers and Laboratory Instruments. By D. J. Malcolm-Lawes
Z. Grossman	948	System Theory in Immunology (Lecture Notes in Biomathematics, Vol. 32). Edited by S. Levin
J. H. Graham	948	Robot Analysis and Control. By Haruhiko Asada and Jean-Jacque E. Slotine
C. O'Connor	949	Image Analysis and Mathematical Morphology. By J. Serra
K. Kamel	950	Proceedings ISMIII'82 First IEEE Computer Society International Symposium on Medical Imaging and Image Interpretation
R. A. Greenberg	950	The Design and Analysis of Clinical Experiments. By Joseph L. Fleiss

C. O'Connor	951	An Introduction to Multivariate Statistical Analysis, 2nd edn. By T. W. Anderson
G. Conway	951	Advanced Graphics with IBM Personal Computer. By I. O. Angell
E. Nicolau	952	Technical, Technological and Social Implications of Bio- engineering (Implicații tehnice, tehnologice și sociale ale bioingineriei). By E. Niculescu-Mizil
<i>Software Reviews</i>		
M. Witten	955	MATH ADVANTAGE
G. Conway	956	FASTBACK
G. Conway	957	LIGHTNING
	I	Softstrip® data strip containing the table of contents of this issue

